

CLEAN VERSION OF THE PENDING CLAIMS

NETWORK TOPOLOGY FOR A SCALABLE MULTIPROCESSOR SYSTEM

Applicant: Martin M. Deneroff et al.

Serial No.: 09/408,972

A2
Sub B1
1. [Amended] A massively parallel processing system comprising:

a plurality of processing element nodes;

a scalable interconnection network comprising:

a plurality of physical communication links; and

a plurality of first level routers for interconnecting the plurality of processing element nodes in a cluster; and

one or more metarouters for interconnecting the plurality of first level routers so that each one of the first level routers in a first cluster is connected to all other clusters through one or more metarouters

wherein if one of the metarouters is coupled to one of the first level routers, then the one of the metarouters is also coupled to less than two other metarouters, otherwise the one of the metarouters is coupled to two metarouters.

2. The massively parallel processing system of claim 1 wherein each one of the clusters is a two-dimensional hypercube.

3. The massively parallel processing system of claim 1 wherein each one of the metarouters are eight port routers.

4. The massively parallel processing system of claim 1 wherein each one of the metarouters are four port routers.

5. The massively parallel processing system of claim 1 wherein each one of the processing

element nodes comprises four processors.

A3 6. [Amended] A massively parallel processing system comprising:

a plurality of processors;

a first set of routers for interconnecting the plurality of processors as two-dimensional hypercubes; and

a second set of routers for interconnecting the first set of routers wherein the hypercubes remain intact as the system is expanded

and wherein less than all of the routers in the second set of routers are coupled to a router in the first set of routers.

7. A scalable multiprocessor network for connecting a plurality of processing element nodes, the scalable multiprocessor network comprising:

a first set of routers for interconnecting a plurality of processing element nodes as n-dimensional hypercubes; and

a second set of routers for interconnecting the first set of routers wherein the n-dimensional hypercubes remain intact as additional processing element nodes are added to the multiprocessor network and wherein less than all of the routers in the second set of routers are coupled to a router in the first set of routers.

8. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects 129 to 160 processing element nodes.

9. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects 161 to 192 processing element nodes.

10. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects 193 to 224 processing element nodes.

11. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects 225 to 256 processing element nodes.

12. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects up to 288 processing element nodes.

13. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects up to 320 processing element nodes.

14. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects up to 352 processing element nodes.

15. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects up to 384 processing element nodes.

16. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects up to 416 processing element nodes.

17. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects up to 448 processing element nodes.

18. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects up to 480 processing element nodes.

19. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects up to 512 processing element nodes.

20. The scalable multiprocessor network of claim 7, wherein the scalable multiprocessor network connects more than 512 processing element nodes.